

Altair

Subject:

7th Combined Science

Class: Reproduction
in Plants

Date: June 3

2011



Teacher's notes

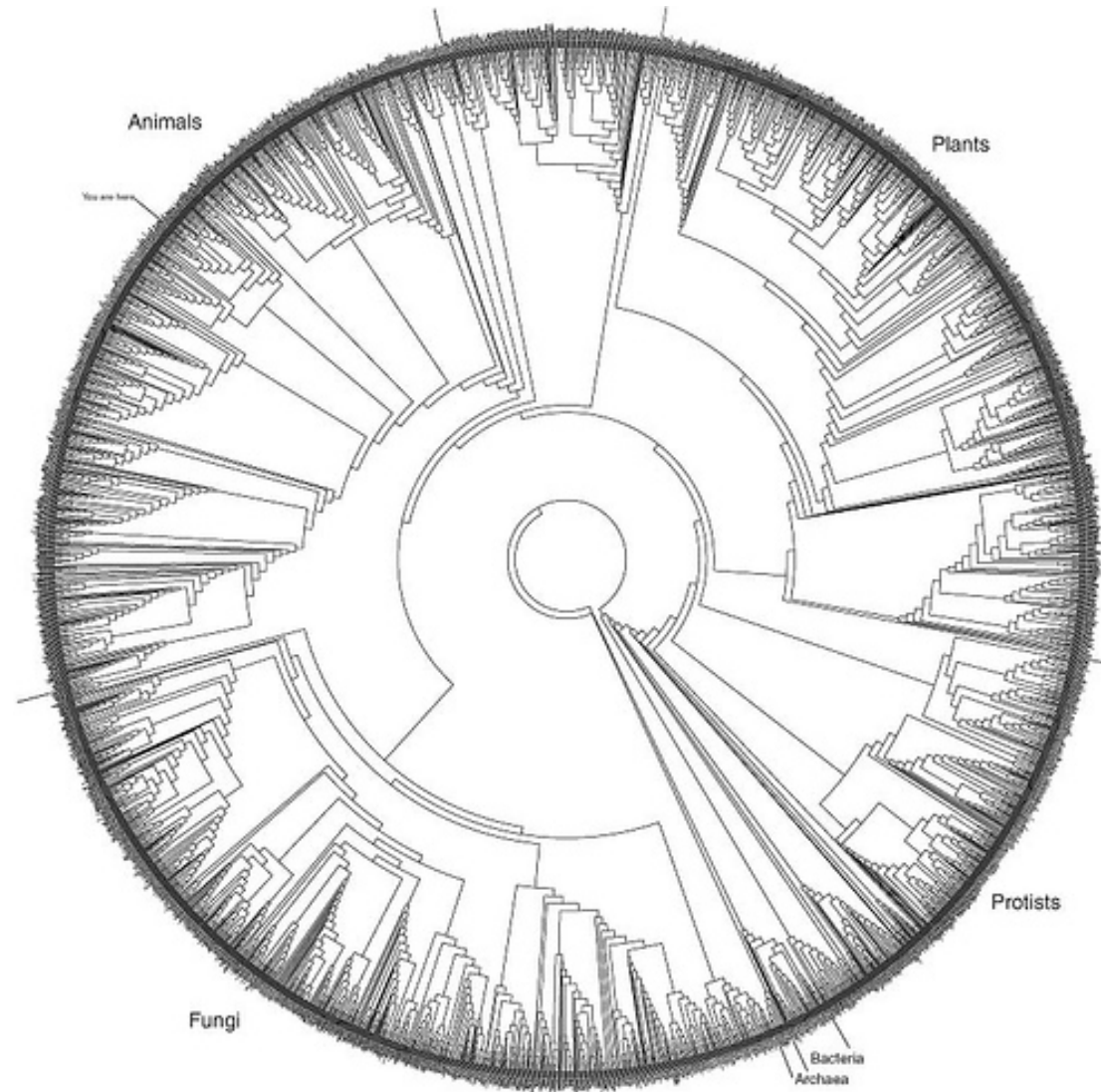
Objectives

Vocabulary

Link and Learn

Prepared by

How diverse is Life?

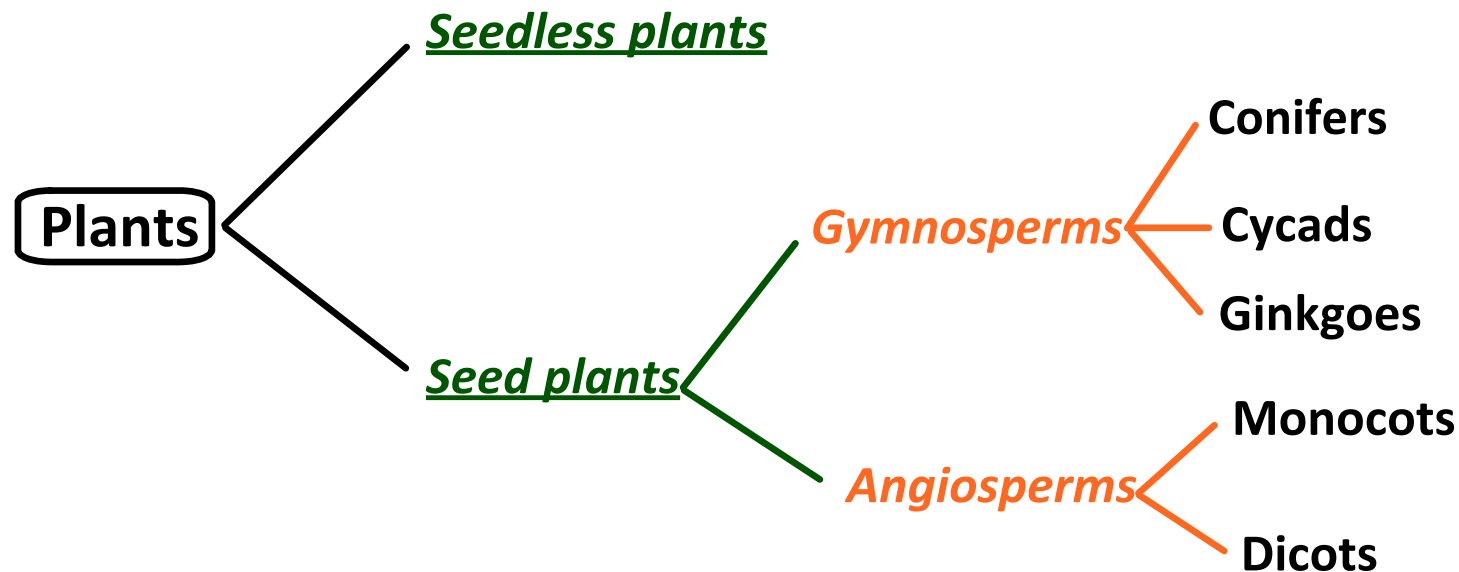


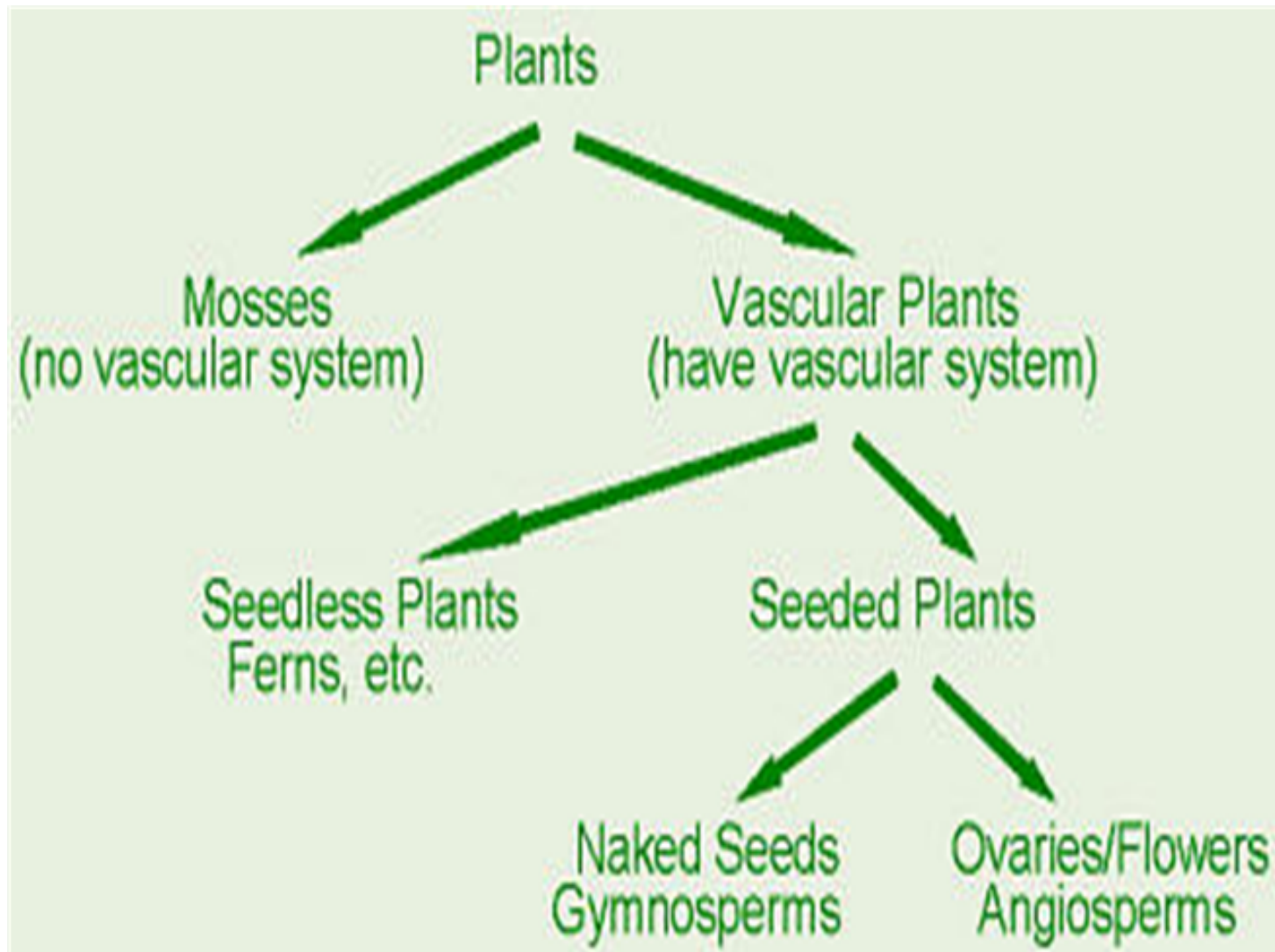
Plant Classification



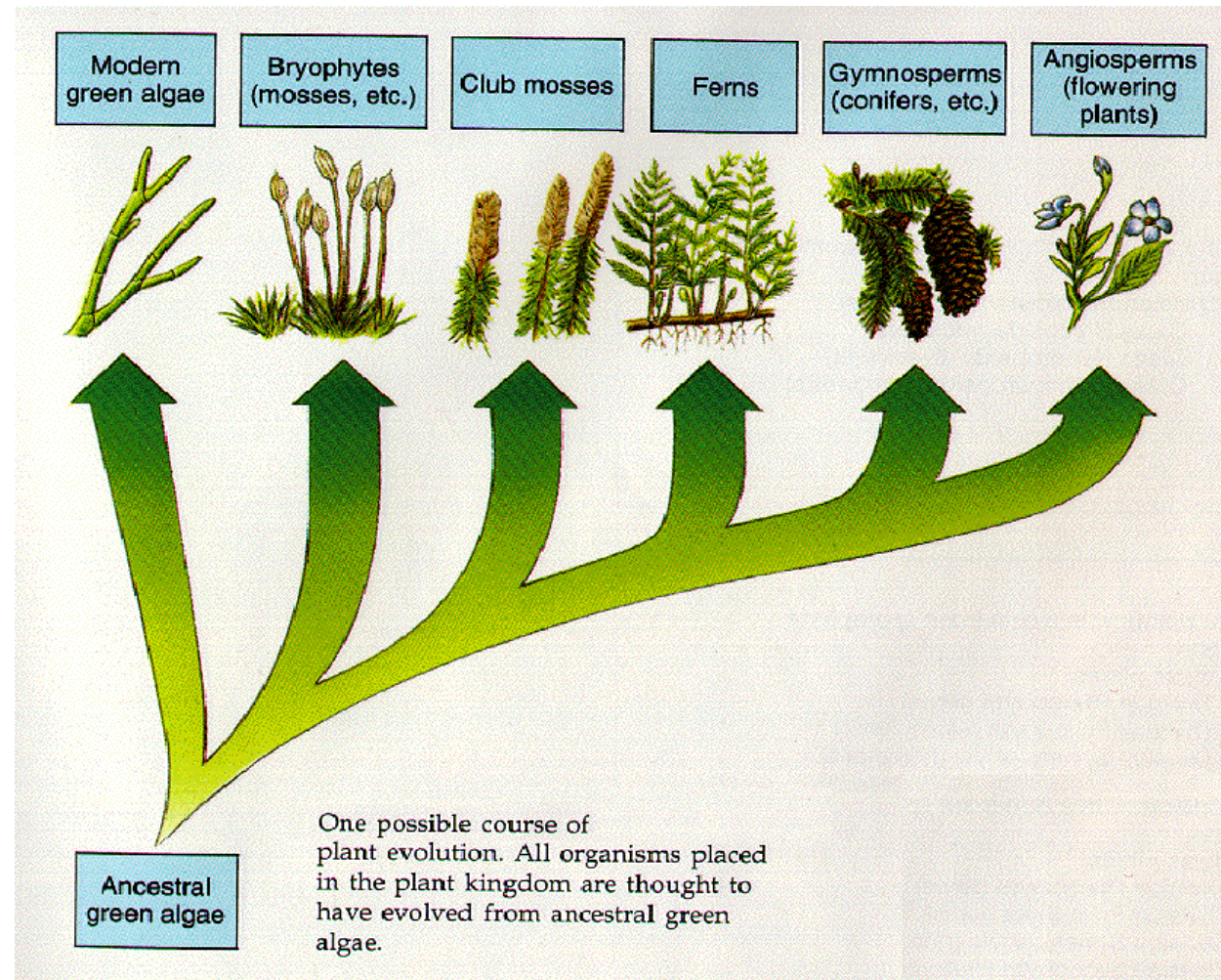
Plant Classification

- Although all plants share common characteristics, they can be classified into groups: ***Non-Vascular*** and ***Vascular plants***.
- Vascular plants can be classified into these subgroups:





What is the origin of plants?



<http://goo.gl/yfXV9>

Non-Vascular Plants

- A non-vascular plant doesn't have specialized tissues to move water and nutrients through the plant.
- So these plants depend on diffusion to move materials from one part of the plant to another (cell to cell).
- Diffusion is possible because non-vascular plants are small.
- Mosses, liverworts and hornworts are examples of non-vascular plants.



Forgotten Flora

Bryophytes - more than just moss

'Bryophyte' is the collective name used for mosses, liverworts and hornworts, often referred to as 'lower plants'.

The moss, liverwort and hornwort 'plant' is made up of two parts:

- the vegetative 'leafy' or 'thallose' gametophyte is present all the time
- the stalked sporophyte is present seasonally.

mosses

liverworts

hornworts

Small, green and what have I found?

	Gametophyte		Sporophyte	
	Green plant	Leaf nerve (costa)	Seta	Capsule opening
moss	leafy	present or absent	sturdy, long-lived, green to brown	peristome present (teeth)
liverwort	leafy or thallose	absent	soft, short-lived, translucent	peristome absent, capsule splits into 2 or 4 lines or decays
hornwort	thallose	absent	absent	peristome absent, capsule splits and unravels from apex to base

Diagrams and Images:

- Mosses:** Diagrams of moss capsules (calyptra, operculum, peristome, capsule, seta) and gametophytes (leafy plant, rhizoids). Images include *Funaria hygrometrica*, *Dawsonia superba*, and *Ceratodon purpureus*.
- Liverworts:** Diagrams of leafy and thallose liverworts, showing capsules and gametophytes. Images include *Chlorocypus semiterre* and *Baccaria invidiosa*.
- Hornworts:** Diagrams of hornworts, showing capsules and gametophytes. Images include *Pseudoceros* sp., *Pleurozia* sp., and *Anthoceros* sp.

Key Features:

- Peristome teeth:** Present in mosses, absent in liverworts and hornworts.
- Costa:** Present in mosses, absent in liverworts and hornworts.
- Seta:** Present in mosses and liverworts, absent in hornworts.
- Capsule opening:** Peristome present in mosses, capsule splits into 2 or 4 lines or decays in liverworts, capsule splits and unravels from apex to base in hornworts.

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There are two main groups in the phylum Bryophyta (Non-Vascular plants): *Mosses*, *Liverworts* and *Hornworts*.



MOSSES

Are found in areas with a humid and a cold to moderate warm climate. In the tropics, mosses are found especially in the mountains.

LIVERWORTS

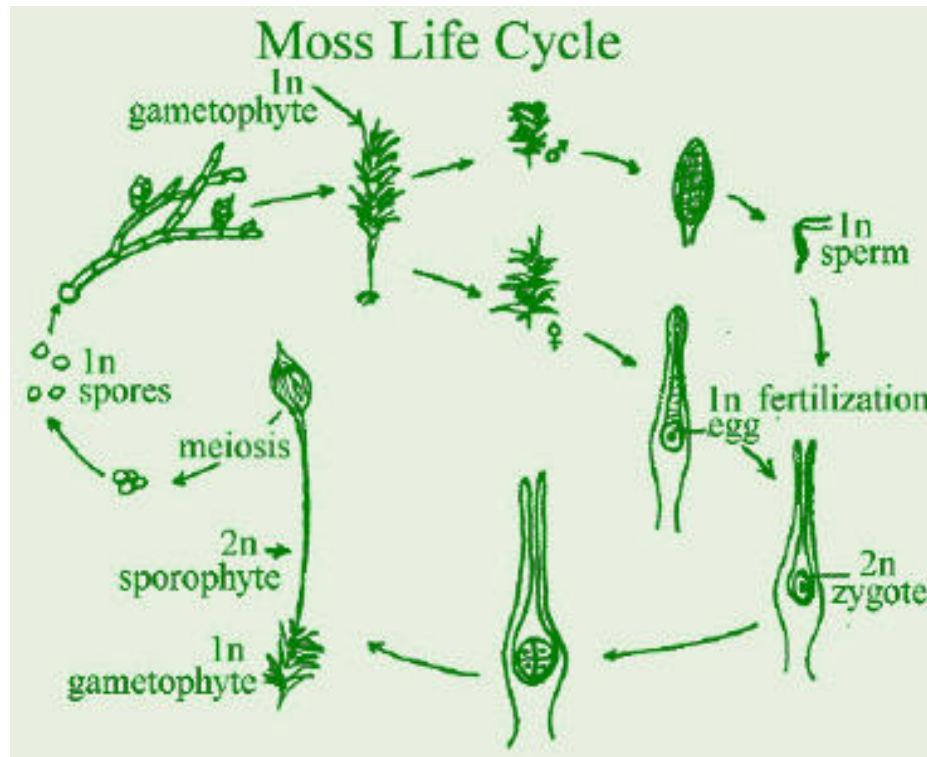
They are widely distributed, occurring from the arctic to the tropics. Most liverworts occur in places where moisture is generally available.



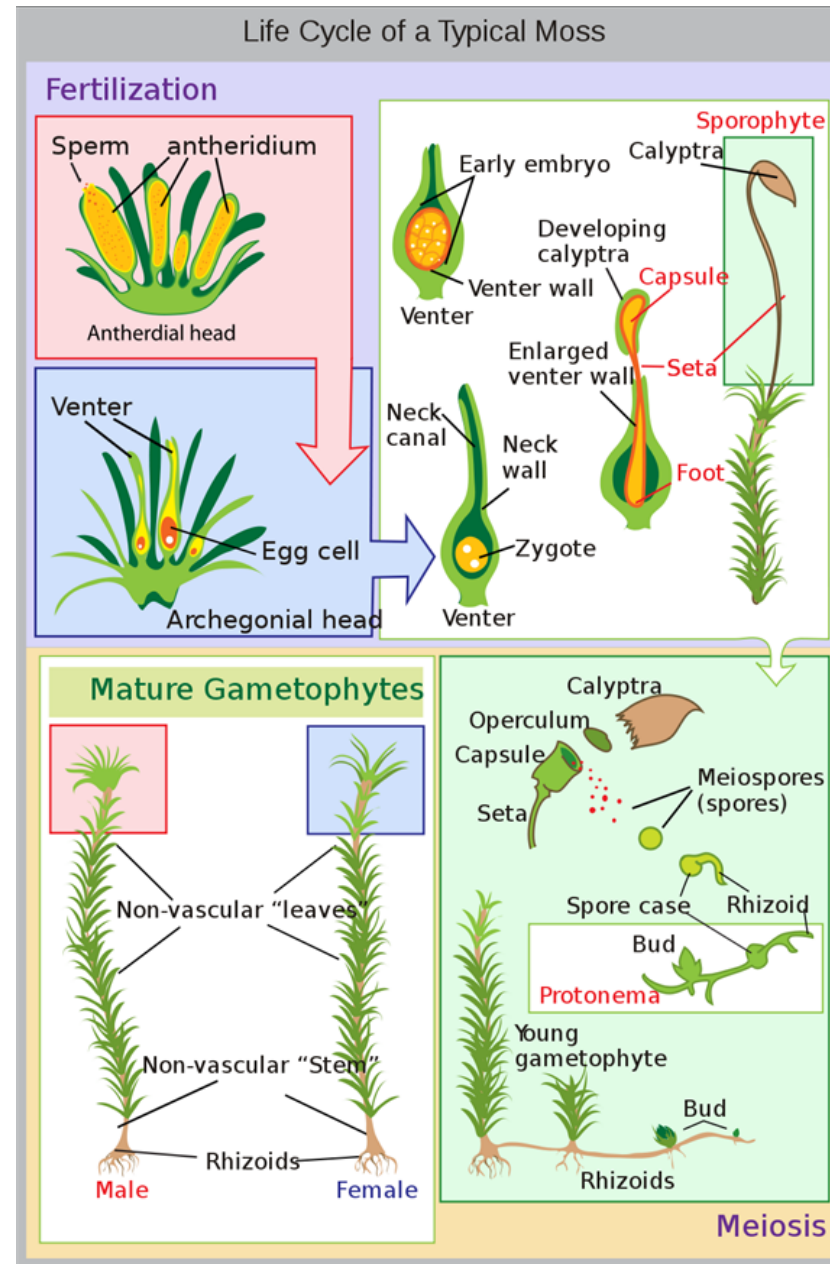
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Reproduction in Non-Vascular Plants



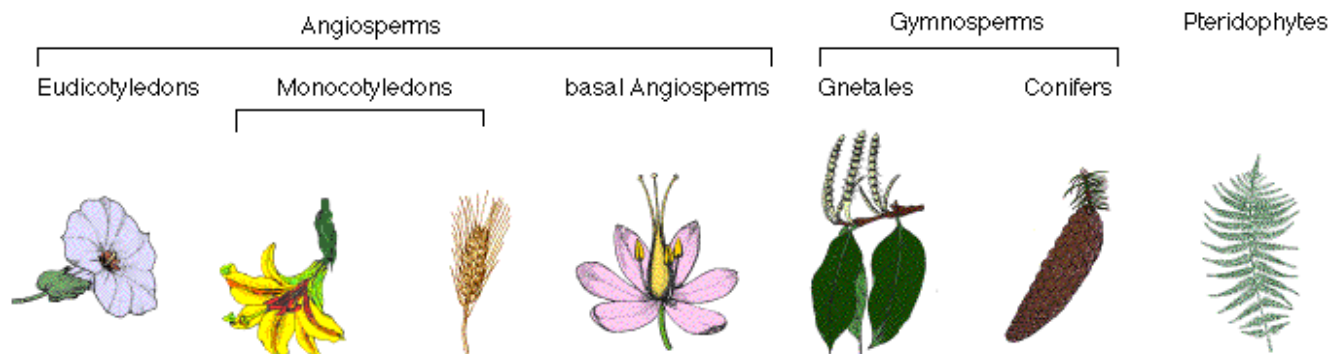
- In bryophytes, reproduction happens by the *alternation of generations*.
- Where the two main phases: *Sporophyte* and *Gametophyte* alternate, using mitosis (Zygote) and meiosis (Sporophyte).



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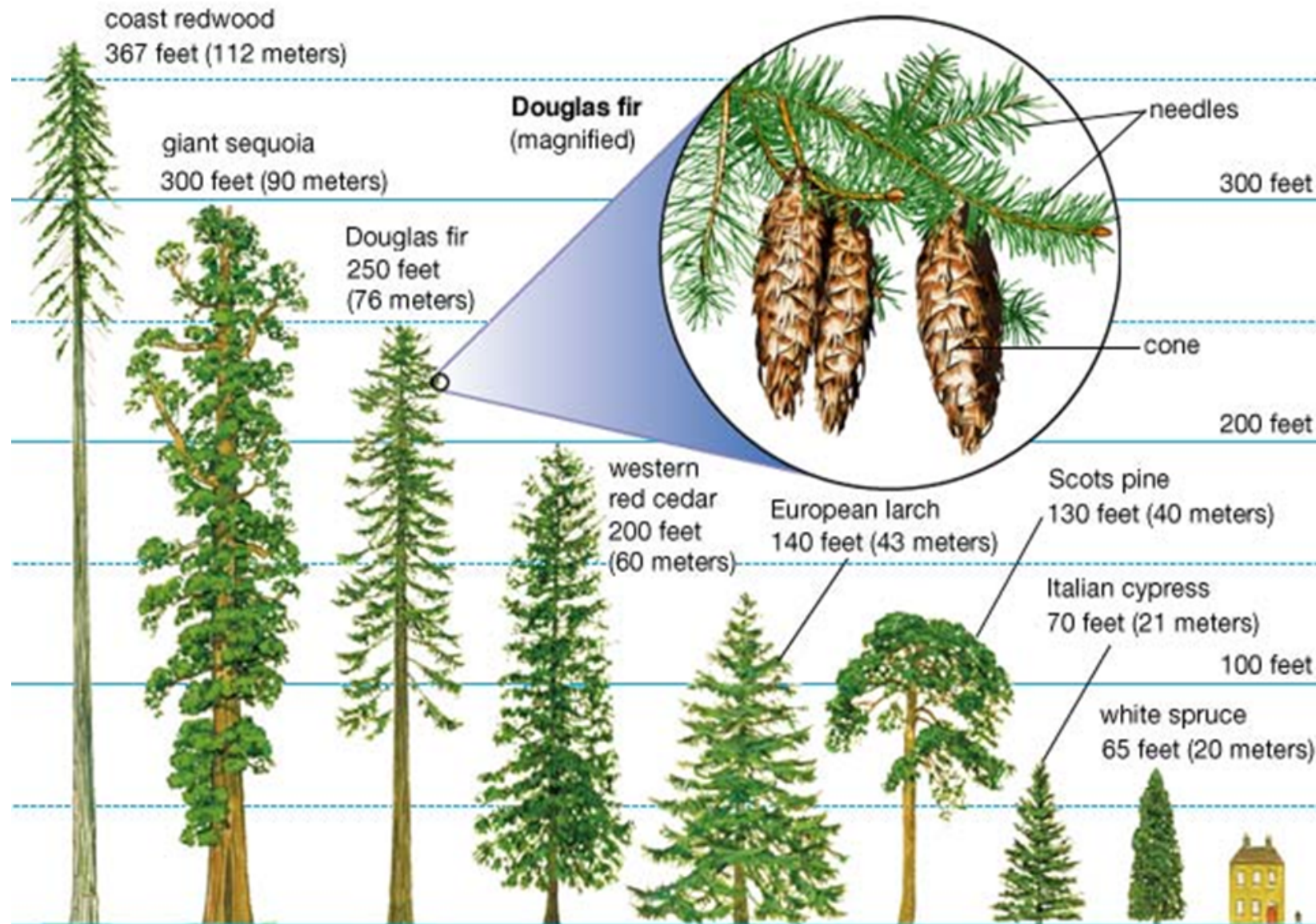
Vascular Plants

- These plants have specialized tissues to move materials through the plant.
- These tissues are called *vascular tissues*, and can move water and nutrients to any part of the plant, which allows it to be of any size.
- Vascular plants are divided into: Seedless plants and two types of plants with seeds.
 - **Gymnosperms** are non-flowering seed plants.
 - **Angiosperms** are flowering seed plants.

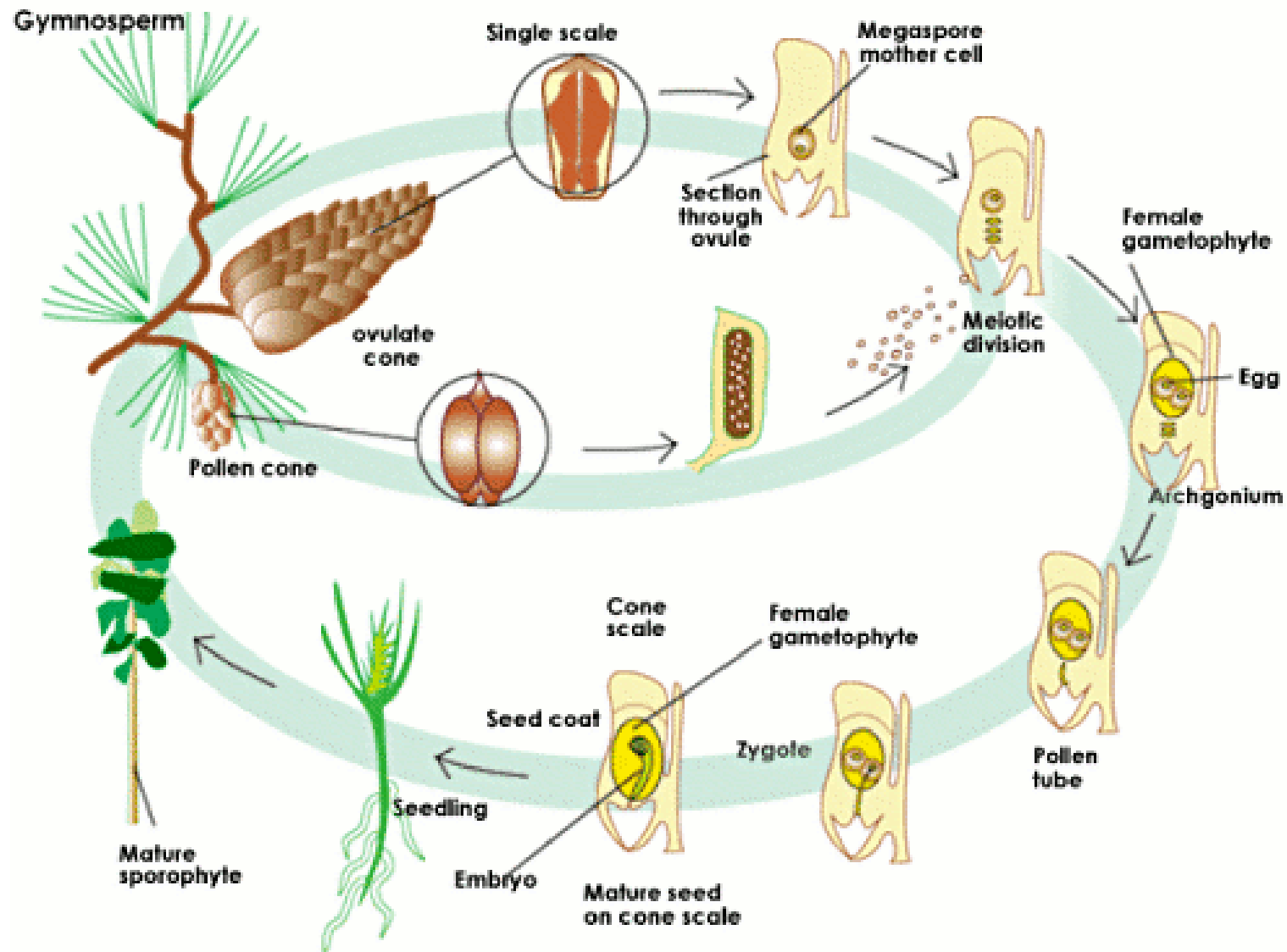


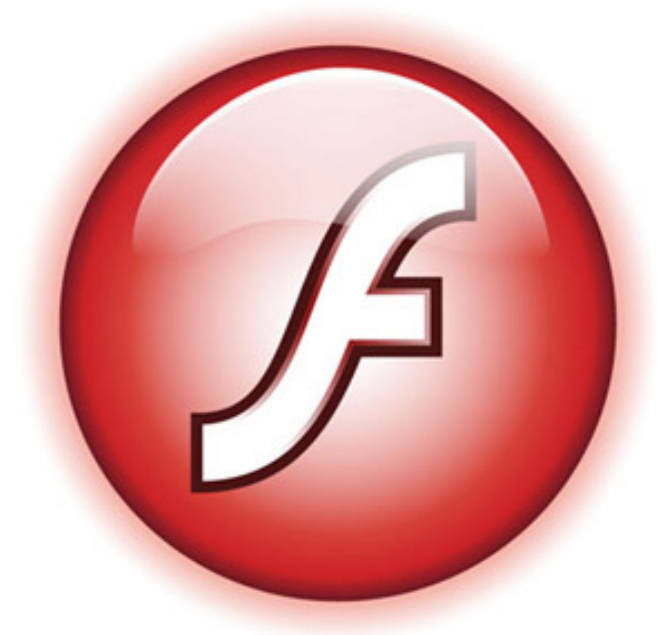
Cone-bearing Plants (Conifers)

- Most conifers have both female and male cones.
- Male cones produce *pollen*, structures for reproduction. Wind may carry this pollen to a female cone.
- There a cell from the pollen joins with an *egg*, a female reproductive cell, and form a single cell that divides many times and develops into a seed.
- Seeds develop between the cone scales, with no outer covering. As the seeds develop, the cone dries out and becomes woody.
- Conifers include: pine trees, firs, spruces, redwoods, junipers, hemlocks, and cycads.



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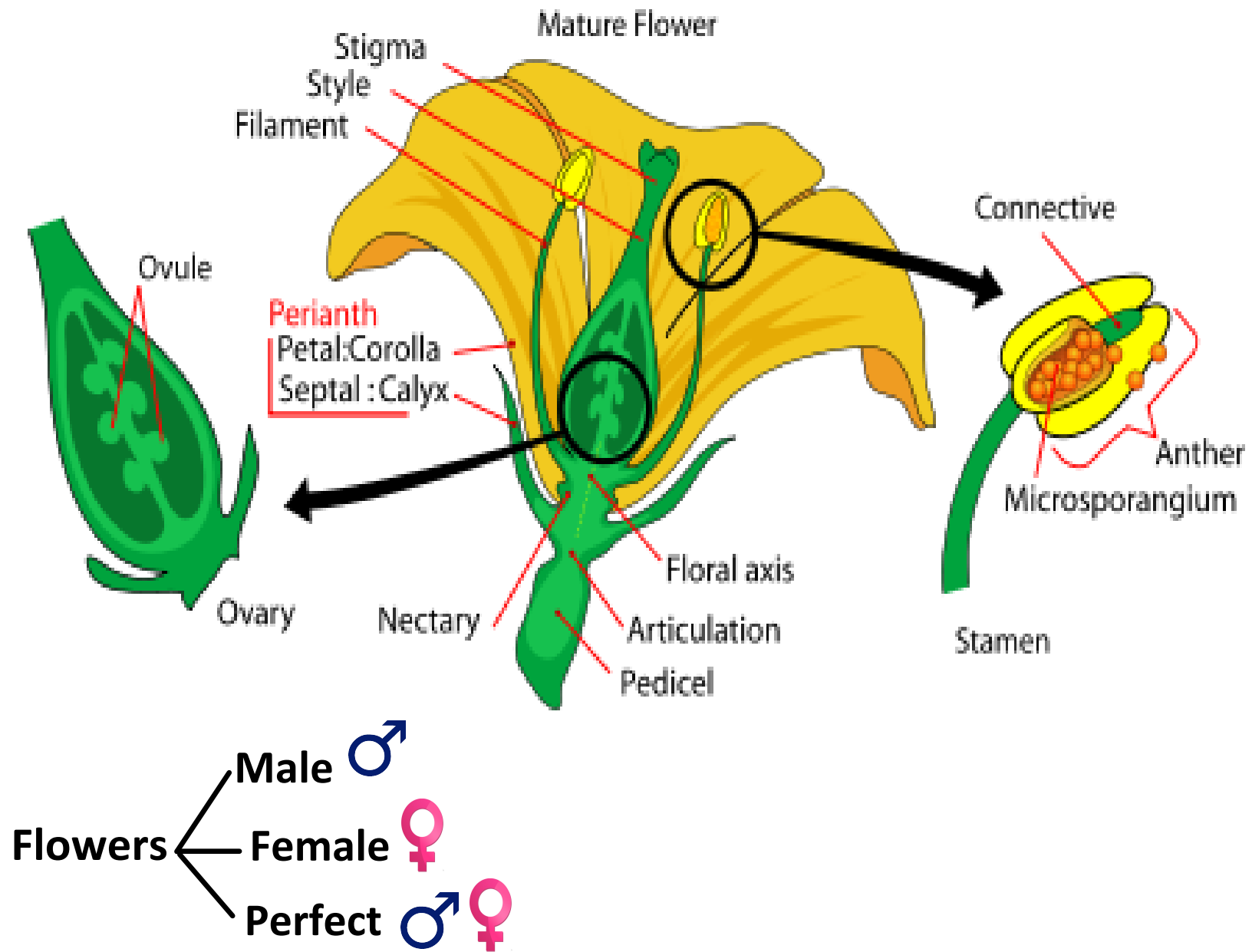


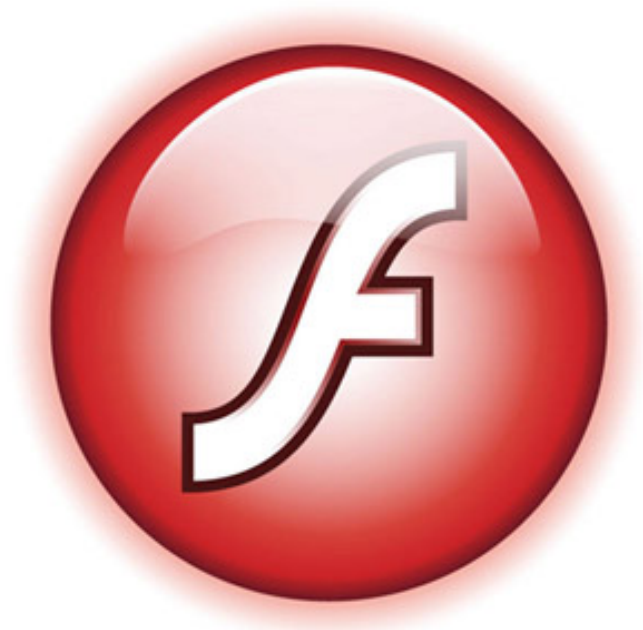
Seed plants

<http://goo.gl/gFbxc>

Fruit-bearing Plants (Angiosperms)

- Most plants you are familiar with form seeds in flowers.
- **Flowers** are reproductive structures. The male part of a flower forms *pollen* and the female part forms *eggs*.
- Seeds form after pollen and egg have joined. As the seed forms, the part of the flower holding the seed changes and becomes a fruit.
- A **fruit** is the part of a flowering plant that contains and protects the seeds.

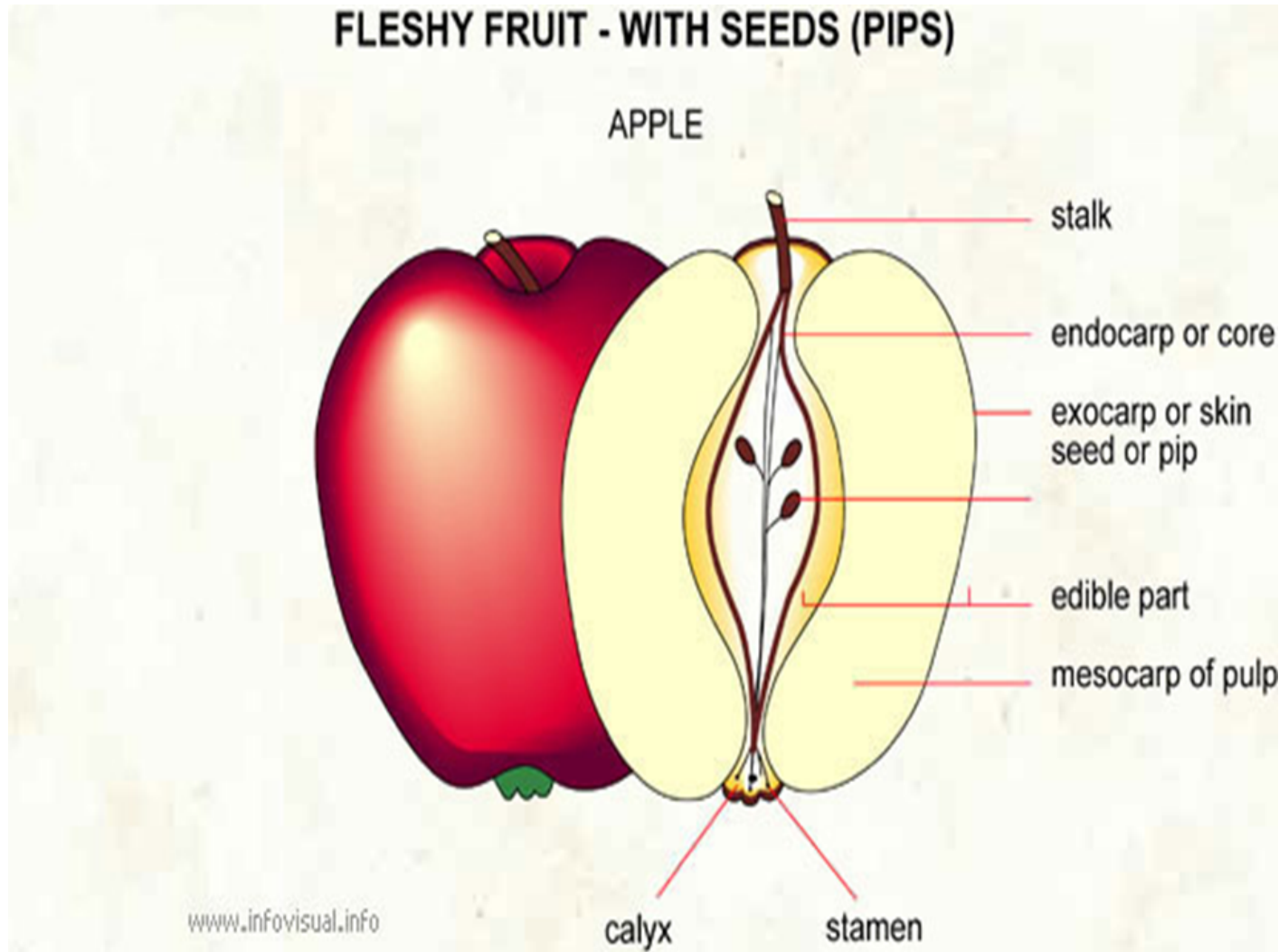


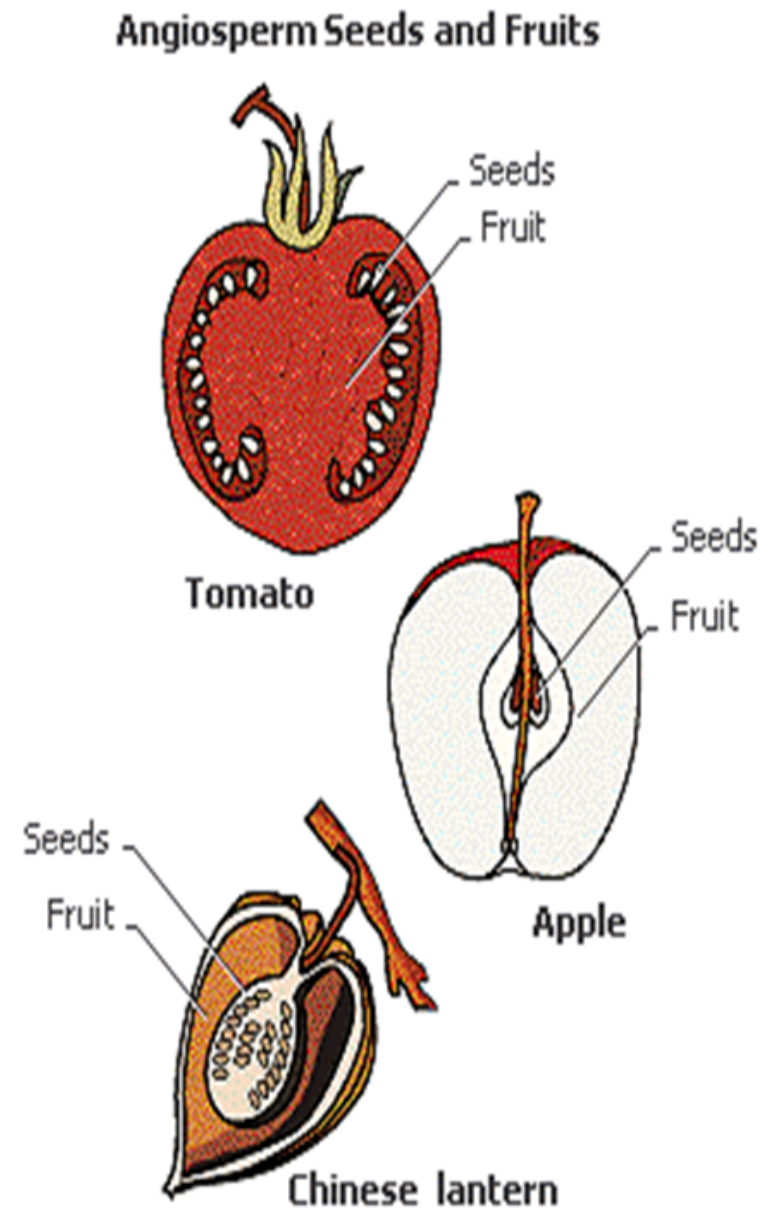
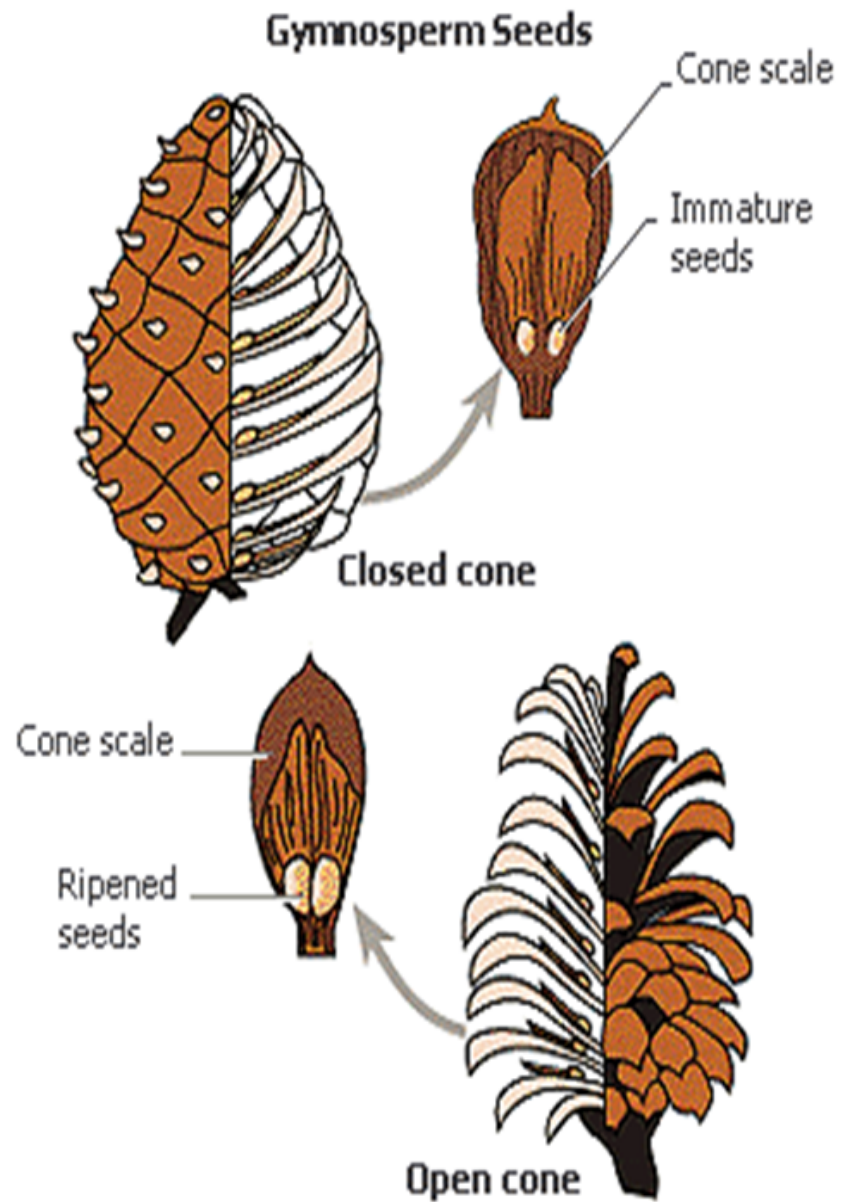


Flower parts
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Double Fertilization
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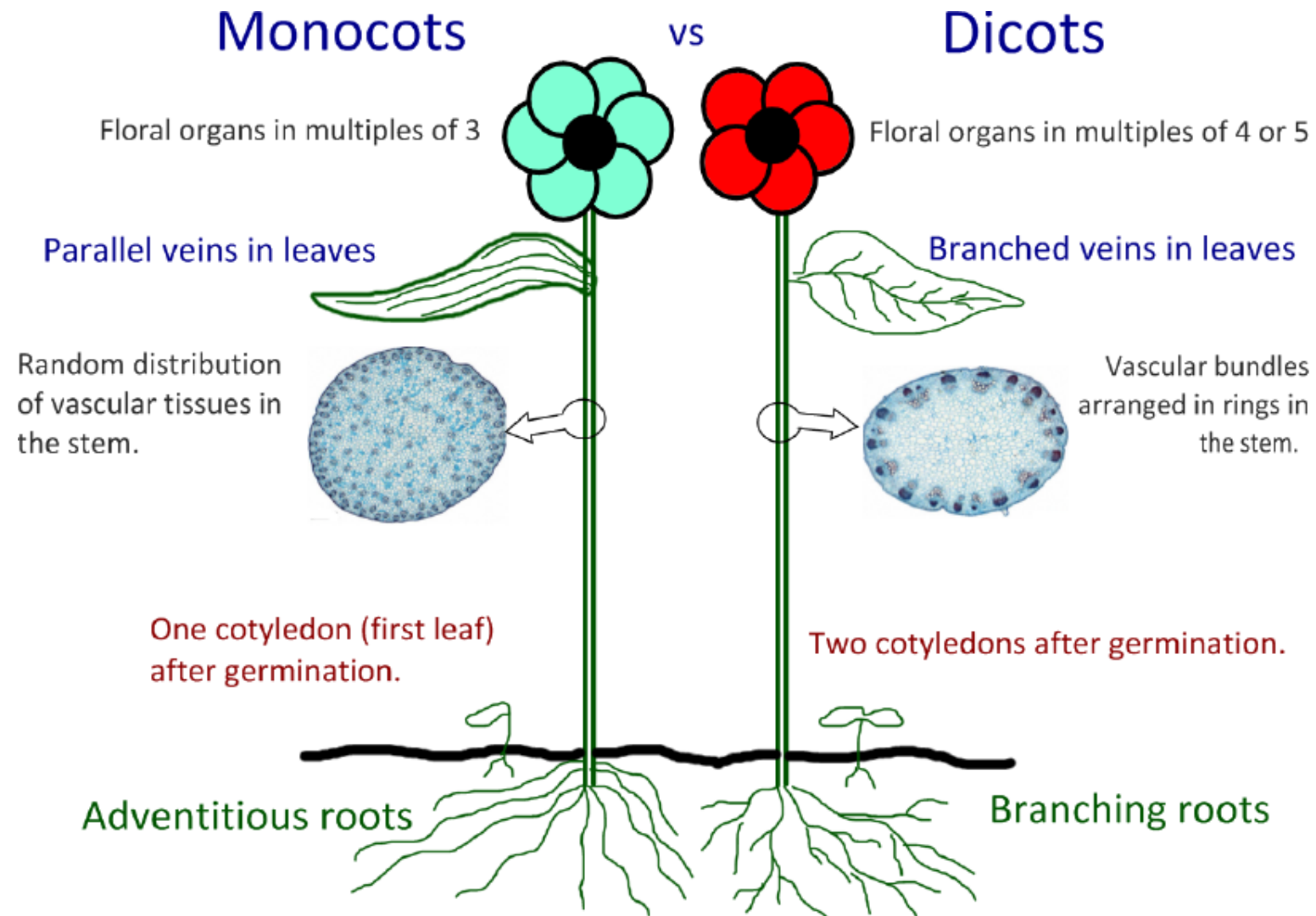
MONOCOT

<http://goo.gl/4h99c>
<http://goo.gl/nHFRe>



DICOT

Comparing Angiosperms



<http://goo.gl/wea7l>

Teacher's Notes

This class has been designed to cover the topics of *Reproduction in Plants* from Monday, May 30th till Friday, June 3rd.

For further knowledge about this topic:

1. Conduct a thorough search under the topic: *Reproduction in Plants* on the Web, books and magazines.
2. If findings are not specific, ask your teacher for suggestions.

BACK

Objectives

- Understand the classification of plants.
- Describe the parts of a flower.
- Understand sexual and asexual reproduction in plants.
- Explain the effects of light in the growth of plants.

***Note:** All, or most, of the objectives will be covered during class time, however the student must be responsible for those objectives not covered or concluded.*

BACK

Vocabulary

- Sporophyte:
- Gametophyte:
- Stamen:
- Pistil:
- Seed:

Note: *Most of the vocabulary words will be covered during class time, however the student must be responsible for those words not covered or concluded.*

BACK

Link and Learn

You can visit the following websites to improve your understanding on the present topic:

- <http://science-altair.wikispaces.com>
- <http://learningandscience.blogspot.com>

BACK

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BACK